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The Facilitation Process and Venereal Disease Control*

A STUDY OF SOURCE FINDING AND SUPPRESSION OF FACILITATION IN THE GREATER VANCOUVER AREA

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TODAY, as never before, events are propitious for the final eradication of the venereal diseases. The urgency of removing the threat of the venereal diseases to the health and efficiency of the armed forces is recognized by all. There is a full tide of wholesome public interest, concern and support for measures directed against these master saboteurs of war effort. Modern medical science has provided the weapons necessary to accomplish the overthrow of syphilis and gonorrhoea. Trained personnel from the ranks of the medical, nursing and welfare professions are available to wage a relentless battle against the foe. Community law-enforcement agencies are anxious to throw their full weight behind the effort. Never has there been arrayed against the venereal diseases such an imposing show of force representing all the available human resources anxious to remove the serious threat of syphilis and gonorrhoea to the health of the nation.

There exists a great danger of dissipating energy and materials and thereby prolonging needlessly the day of final victory. The vast potential may be largely

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wasted and rendered non-effective if the strategy is not well directed. The success of a venereal disease control "front" lies in concentrating the most effective force where the greatest progress will be attained in the shortest time. Fundamental to the control of any communicable disease is epidemiological investigation of the acquisition of the disease, followed by action rendering the source non-infectious and inaccessible to healthy persons. In the application of this principle of communicable-disease control lies one of the most important weapons that can be used against the venereal diseases.

THE FACILITATION PROCESS

The acquisition of venereal disease is comprised of two component parts, firstly, the source or infected individual and, secondly, the circumstances whereby the source is made accessible to the once healthy person. Based upon this dual concept of acquisition, control efforts logically consist of two steps—action dealing with the source, and action directed toward the removal of conditions rendering the source accessible. This orthodox approach has been largely neglected in the control of the venereal diseases. Interest and attention have been lacking because the epidemiology of syphilis and gonorrhoea envisaged by a gun-barrel-vision perspective has seen only distantly and incompletely the problem of the source and has been entirely blind to the extensive surrounding visual field comprising those important factors related to the accessibility of the source. It is with the problem of accessibility of sources of syphilis and gonorrhoea that this presentation is chiefly concerned. To this phase of the acquisition of the venereal diseases the term "facilitation process" has been given.

The facilitation process comprises those community conditions associated with the direct or indirect, witting or unwitting participation, usually for monetary gain, of third persons whereby individuals suffering from communicable venereal disease are made accessible for intimate exposure to healthy persons. The facilitation process centres chiefly around those community fornicatoriums known commonly as disorderly houses, and is associated also with certain beer parlours, hotels, dance halls, taxicab companies, rooming houses, apartment blocks, massage parlours, tourist camps, roadhouses and restaurants. The "facilitators" or third-person participants are "madams", pimps and procurers, with whom are closely associated certain physicians, lawyers, finance companies and real-estate agencies. Less obvious but definitely in the ranks of the facilitators are the managers and owners of premises which facilitate healthy individuals toward sources of gonorrhoea and syphilis. The attitude of certain civic administrations, health departments and law-enforcement agencies who condone community conditions which year after year facilitate large numbers of each new generation toward venereal infection and ill health, places the officials in these administrations in particular, and the public in general, in the position of being facilitators. Last but by no means least among the facilitators are those engaged in the commerce of alcohol for oral administration. Alcohol is the lubricant of the facilitation process. It enables the wheels of facilitation with smoothness and dispatch to hasten healthy citizens relentlessly to ill health and misfortune.

The facilitation process differs in its nature and extent in every community. The process can be accurately and quickly investigated and assessed by a careful study of that aspect of the acquisition of infection by each new patient with gonorrhoea or syphilis pertaining particularly to the means whereby the patient, once healthy, found access to the source of his ill health.

THE INVESTIGATION OF THE SOURCE AND THE FACILITATION PROCESS IN THE ACQUISITION OF VENEREAL INFECTION

A person with a recently acquired gonorrhoeal or syphilitic infection is a most valuable public health asset. This paradox may seem startling, but it is nevertheless true. Throughout our communities run the ever ramifying, ever multiplying threads of venereal infection—threads of a web, which, hidden by prudery and submerged by sophistry, catches countless men, women and children in its meshes of ill health and death. The patient with a recent venereal infection has touched that hidden net-work somewhere; that is why he is ill; that is why he is seeking help from his physician. This patient has information which can initiate action that will expose a portion of the dank mesh to the wholesome light of modern medical science and public health influence, action which will remove unsavoury community influences which make it easy for healthy persons to touch the foul web of community venereal disease.

The infected patient can be a benefactor to the public health. The patient's physician likewise can be an accessory to this beneficence. It all hinges upon the physician's earnestly, diligently, painstakingly seeking information from the patient regarding the source and the circumstances concerned in the acquisition of his infection. Both patient and physician must be imbued with a sense of the importance of this information, for the future of many for good or for ill depends upon action based on the information. A single source of infection detected and adequately treated may represent a fabulous gain in prevented human suffering. As the penny doubled each succeeding day amounts to tens of thousands of dollars in a month, so the undetected, untreated source of infection may directly and indirectly spread infection till in but a few years the undetected source has been the progenitor of countless infections. Similarly, action directed against facilitators and their facilitating activities may, by rendering sources inaccessible to healthy citizens, prevent untold numbers of infections. It is obvious, therefore, that the recently infected patient and the information he possesses regarding the acquisition of his or her infection constitute a most valuable health asset.

Upon the accuracy and detail of information provided depends the success of appropriate agencies in protecting the health of the community against specifically named sources and community conditions promoting the spread of venereal disease. It requires time and patience on the part of the physician and confidence on the part of the patient. The information cannot be obtained by blunt questioning. Complete privacy during the interview is essential. Compelled by a strong personal sense of responsibility, aware of the confidential handling of information by the health department, certain that his identity will

not be revealed, and assured that the source of his infection will not be embarrassed but will be approached by a health department worker, discreetly, with kindness and from the standpoint of the source's personal health, the patient under these circumstances usually will tell the truth in complete detail.

As far as the source is concerned, the name and the address are the keys to the investigation. They unlock the door. If not obtained on first questioning, a second and a third "talk" should be tried. The skilful building up of responsibility in the mind of the patient often in a day or two will end in the complete story. An answer about "being too drunk to remember" given as a first reply frequently covers personal reticence and a desire to protect the identity of the source. Repeated sincere questioning often elicits the name and address. Other accessory data of importance concerning the source should include: the approximate age, weight, build, colour of eyes and hair, and miscellaneous characteristics such as complexion, scars, deformities, speech, mannerisms, racial origin, clothing, jewellery, etc.

When source information has been obtained the investigation should proceed to reveal whether facilitation was associated with the exposure or not. In many instances no facilitation coëxists. Was the exposure free from mercenary participation in the relationship of a third party? Where information regarding the source per se is scanty or lacking, details concerning facilitation may prove of paramount value. The role of facilitation will be revealed readily by detailed answers to the following basic questions which may be elaborated upon considerably in preparing a questionnaire form:

1. When did patient meet source? Day.....Month.....Year.....Time.....
2. Where did patient meet source?.....
.....
(Address, Name, Description, etc.—Rooming house, home, party, disorderly house, beer parlour, restaurant, hotel, park, etc.)
3. How did patient happen to meet source?.....
.....
(Introduced by friend, hotel clerk, waiter, rooming-house proprietor, taxi driver, etc. Give names and descriptions. State whether introduction intentional for promiscuity and give details.)
4. When did exposure occur? Day.....Month.....Year.....Time.....
5. Where did exposure occur?.....
(Address, Name, Description,—of hotel, disorderly house, rooming-house, park, car, etc.)
6. Was a charge made?.....Amount?.....
7. Other information .....
.....
(Alcohol prior to exposure, prophylaxis at time of exposure, etc.)

THE CARE OF SOURCE

Detailed information concerning the source in the possession of the expert health-department epidemiological worker will result in many sources being found and placed under proper care. Immediate efforts should be made to find the source; time is precious. The source must always be considered as a health and a welfare problem. Where facilitation coëxists, the latter problem is often primary and fundamental to the former. Frequently a background of social injustice and economic insecurity exists. For the person's future well-being it

is as important to correct these factors as it is to reëstablish her state of good health. Occasionally inherent defects of behaviour predispose to the patient's ill health. Individuals of this type are difficult to care for. They are often asocial, amoral and incorrigible. Fortunately, they are few in number. Management of their problem may necessitate institutional care. A few sources through no fault of their own suffer from a hyper-physiological urge to procreate. Modern medical science unfortunately has little to offer for this human tragedy.

Wherever and whenever a source is found, he or she must be treated as a human being that needs medical care, kindness and often social and economic assistance. The attitude of the health department should not savour of condescension, convey an implication of broken moral codes, or smack of infracted criminal statutes. Too often and too long have we permitted the term "suppression of prostitution" to crack the whip lash of community legal action against unfortunate, unhealthy women, harrassing and badgering them into further depths of underworld subjection and personal abjection, while those facilitators who have lived off the earnings of these sick women have not felt the sting of public indignation and the welts of restraining law enforcement. The community should "suppress facilitation" rather than prostitution.

ACTION DIRECTED AGAINST THE FACILITATION PROCESS

The role of the health department in directing action against the facilitators and facilitation process is a relatively limited but nevertheless important one. On the basis of information obtained from patients suffering from recent venereal infection, the health department's duty is to arouse the personal consciousness of the facilitators in their participation directly or indirectly, wittingly or unwittingly, in the spread of venereal disease. The health department should point out the seriousness of the situation and the need for removing the facilitation. The department on the basis of its experience may even advise the facilitator of the best means of effectively and expeditely dealing with the facilitation. The burden of action itself, however, should not be carried by the health department. The responsibility lies with the facilitators themselves, and with appropriate community agencies concerned with the particular type of facilitation under consideration; agencies which are empowered through laws and by-laws in every community to deal with the specific phases of facilitation concerned.

Much can be accomplished on a voluntary basis. Suasion and voluntary co-operation are always preferable to force and legal action. The latter should be a last resort. Personal interview by two senior members of the health department, confirmed immediately in writing, outlining diplomatically the health problem and the associated facilitation, is the first step. Incorporated in the conversation and subsequent correspondence should be suggested means for reducing the facilitation. Where a man in the Armed Forces or in war industry has been infected, the reduction in the efficiency of the war effort should be emphasized. This approach in the final analysis actually represents personalized venereal-disease education. The education is applied strategically where it is most valuable.

The sincere, co-operative facilitator, one usually unwittingly associated with the facilitation, will immediately do everything in his power to assist. Indeed, this type of person often becomes a tower of strength behind the scenes for the health department. Where insincerity exists, the continuance of facilitation produces with each new infection an increasing number of interviews and confirmatory correspondence, the cumulative weight of which often effects the badly needed action by the facilitator. Where this fails, the seriousness of the continuing threat to the public health is such that the health department in its line of duty to the citizens and the well-being of the community must discuss the matter with and send copies of the confirmatory correspondence to the senior health officials, appropriate licensing boards, law-enforcement agencies and other civic administrative departments whose laws and by-laws are directed against the specific type of facilitation concerned. Where co-operation and mutual understanding between the health department and facilitator fail, cancellation of the licences of offending premises such as rooming houses, massage parlours, hotels, beer parlours, taxicab companies and dance halls, stiff fines for landlords and real-estate agencies, and lengthy jail sentences for the madam, the pimp and the procurer, have a most salutary effect.

The most flagrant facilitators—the madam, the pimp and the procurer—are always a law-enforcement problem. The only "co-operation" they are willing to give is one which involves no interference with their soiled monetary returns. Their "co-operation" always calls for some sort of tragic compromise with a weak-kneed, supine, spineless health department whereby the latter unwittingly becomes part and parcel of the BUSINESS by carrying the burden of the medical cares for the madam and her cohorts. Unfortunately, it is against this group of facilitators that action and justice have miscarried so frequently in the past because we have thought in terms of suppression of prostitution instead of "suppression of facilitation". Thereby the poor exploited inmate has been crushed and those flagrant facilitators—the madam, pimp, procurer, and the associated landlord, real-estate agent, finance company, physician and lawyer—have gone on aiding and abetting the spread of venereal disease without any restraint whatsoever. The time for the severest public censure possible and the stiffest legal coercion available directed against these flagrant facilitators has arrived. Venereal disease will be reduced when this action takes place and the reduction will be in proportion to the intensity of the coercive action and the length of time it is maintained.

The strategy directed against facilitation in any community will depend upon the nature and extent of the process in that particular community as determined by the investigation of the circumstances associated with the acquisition of new infections of venereal disease. Although the general pattern of facilitation will be similar in most areas, it will have its own local peculiarities. Frequently, ingenuity will be taxed to determine the most effective anti-facilitation action.

The general effect in a community where facilitation is reduced is to find exposure to infection more difficult. Exposure becomes a man-woman proposition free from the mercenary participation of a facilitator. Former disorderly

houses are now occupied by decent families. Dance halls no longer admit unescorted persons. Certain beer parlours which were literally the anterooms of brothels have been forced to close. The remainder have partitions, so that tired war-industry workers late in the day going in to cash a wage cheque are not confronted brazenly by venereally-infected women at adjacent tables. Beer parlours are particular about the waiters they hire for Saturday night business—the pimping waiter with his infected girl friend "spotted" in the premises may bring down licence cancellation action on the parlour because of the facilitation of venereal disease resulting therefrom. Taxicab drivers no longer wish to be accessory to the infection of a visiting convention delegate with a fine wife and children back home whose health thereby may be endangered. Citizens and their representatives in civic administrative positions no longer wish to be placed unwittingly in the position of living off the avails of prostitution by the periodic fine-licensing of illegally operating, disease-dispensing, disorderly houses. Health departments no longer limit their control efforts to the provision of medication pumping stations. They now study assiduously the details concerning the acquisition of every new gonorrhoeal or syphilitic infection and keep a diligent watch for the appearance of the facilitation process in the community. Each year the health department observes the amount of facilitation associated with the acquisition of new infection. Coincident with a gratifying yearly downward trend in attack rate, a diminishing percentage of facilitation is noted. Venereal disease is on the way out. Wholesomeness and health have replaced facilitation and venereal disease!

SOURCE FINDING AND THE FACILITATION PROCESS IN THE GREATER VANCOUVER AREA

Having discussed in general terms the subject of facilitation, it is the purpose of this presentation to relate specifically the experience of the Vancouver Clinic, Division of Venereal Disease Control, Provincial Board of Health, British Columbia, concerning source finding and the facilitation process in the Greater Vancouver Area. A detailed study has been made of the acquisition of gonorrhoea and primary syphilis by adult male persons admitted to the Vancouver Clinic. The source and facilitation process were investigated in each instance. The results of efforts firstly to find the sources of these infections, secondly to determine the nature of the facilitation, and thirdly to direct action against the associated facilitator, are presented, along with the gratifying early evidence of reduced venereal disease in the Greater Vancouver Area. In every instance the greatest possible care was taken to differentiate the actual source of an infected patient from other contacts. This was obviously more difficult in the case of syphilis, but where any doubt existed concerning an alleged source, the individual was not listed as a source.

In table 1 are shown the results of investigation of the female sources of the 884 male gonorrhoeal and the 55 male primary syphilitic infections admitted to the Vancouver Clinic during the years 1940 and 1941. The preponderance of gonorrhoeal as compared with syphilitic infections is immediately evident.

The much greater number of gonorrhoeal infections as compared with that of syphilis demonstrates the greater opportunity to gain information regarding facilitation in the area from a study of gonorrhoea than from syphilis. The value of the volume of evidence based on numbers of infected patients and its cumulative effect in establishing a case against facilitators and facilitation is evident. Conversely, interest in venereal-disease control limited to syphilis alone would render incomplete and hazy any true picture of facilitation in the Greater Vancouver Area and as a result provide no clear-cut evidence upon which to support action against the facilitation process. The gonorrhoea-to-syphilis ratio of 16 to 1 suggests the likelihood of the presence of considerable undetected male primary syphilis in the community.

From the standpoint of source finding the results are not wholly gratifying. This very fact, however, gives weight to the importance of attention to the facilitation phase of the acquisition of the infections. Where source finding fails, anti-facilitation action often will save the day. For the 884 male gonorrhoeal infections, 191 sources (22 per cent) were found. Of the 55 instances of male primary syphilis, 11 sources (20 per cent) were found. It is of interest to note the close correlation between the percentage of sources found for the two types of venereal infection. Generally it is believed that source finding in syphilis is less successful than it is with gonorrhoea. These figures do not support this contention. A striking correlation will be observed throughout table 1 when

TABLE 1

RESULTS OF INVESTIGATION OF FEMALE SOURCES OF 884 MALE GONORRHOEAL AND 55 MALE PRIMARY SYPHILITIC INFECTIONS ADMITTED TO THE VANCOUVER CLINIC DURING 1940 AND 1941

Investigation of Acquisition of Infection		Type of Infection	Number of Infected Males	Female Sources Found	
				Number	Per cent
A	Source of Information Unavailable	Gonorrhoea	176	0	..
		Syphilis	11	0	..
		Totals	*187*	*0*	..
B	Source of Information Available	Gonorrhoea	708	191	27
		Syphilis	44	11	25
		Totals	*752*	*202*	*27*
	1. Facilitation Involved	Gonorrhoea	276	47	17
		Syphilis	25	3	12
		Totals	*301*	*50*	*17*
	2. No Facilitation	Gonorrhoea	432	144	33
		Syphilis	19	8	42
		Totals	*451*	*152*	*34*
Totals (A and B)		Gonorrhoea	884	191	22
		Syphilis	55	11	20
		Totals	*939*	*202*	*21*

gonorrhoea and syphilis are compared from various standpoints. For example, there is a complete lack of information regarding the source in 20 per cent of each infection group. Although only one-fifth of the sources were found, the value of the detection and adequate care of 191 persons with gonorrhoea and 11 with early, highly communicable syphilis on a basis of their actual and potential danger to the community cannot be considered by any means a small public health gain.

In the infection of 708 men with gonorrhoea, facilitation played a contributory role in 38 per cent or 276 instances. Analysis of source finding on the basis of whether facilitation existed or not demonstrated a striking difference in the effectiveness of source finding under the two circumstances. In 432 cases where there was no facilitation 144 or 33 per cent of the sources were found; whereas, in 276 instances where facilitation occurred only 47 or 17 per cent were detected. The figures for syphilis, though smaller in number, corroborate this disparity to an even greater extent. These findings generally confirm the difficulty which health departments encounter in locating the sources of infection associated with facilitation. It is this very type of source which it is most important to detect because of the number and diversity of her exposures. It is obvious from the study that the results are rather unsatisfactory in this group. This very fact originally initiated the indirect strategy focussed upon facilitation. Often where information regarding the source was partially or completely effaced by the influence of alcohol, facts concerning the facilitation were remembered.

Investigation of the facilitation process in the Greater Vancouver Area revealed that it centred chiefly around tolerated, illegally-operating disorderly houses, certain beer parlours, a dance hall and several rooming houses and cheap hotels. It became apparent that these premises wittingly and unwittingly, directly and indirectly, were facilitating healthy men toward intimate exposure to women infected with gonorrhoea and syphilis. In the two years referred to in table 1, 276 male gonorrhoeal infections and 25 male primary syphilitic infections were associated with facilitation. The comparative figures for gonorrhoea and syphilis are noteworthy. This comparison demonstrates the relatively small, almost negligible evidence that would have been built up against facilitation in the Greater Vancouver Area in the two-year period if the Vancouver Clinic had interested itself only in syphilis. The action based on numerically impressive evidence provided by the investigation of facilitation in the acquisition of gonorrhoea could never have been developed on the basis of syphilis alone.

An interest by the Clinic solely in source finding would have permitted 80 per cent of the sources to continue as a serious actual and potential hazard to the community health. Where facilitation existed, steps were taken to demonstrate the need for action and in many instances the Clinic indicated the type of action which would be most effective. The basic principle behind all action was that of making it as difficult as possible for apparently healthy men to meet potentially infected women. In table 2 are shown four examples of facilitation premises, indicating the type of action directed against the facilitation and the

results in reduced incidence of male gonorrhoea following the action. A very striking reduction is seen in every instance.

The suppression of disorderly-house facilitation was accomplished largely by effective newspaper publicity, widespread, intensive public education and the enforcement of sections of the Criminal Code of Canada, especially those sections directed against the landlord and rental agencies. Certain "madam-owners" still persist in their illegal, disease-dispensing pursuits. The Division of Venereal Disease Control believes that the deterrent effect of mandatory gaol sentence as provided under Section 229, Subsection 4, of the Criminal Code of Canada reaching these "madam-owners" would further reduce facilitation associated with disorderly houses in the City of Vancouver.

TABLE 2

REDUCTION IN MALE GONORRHOEA INCIDENCE OBTAINED BY ACTION DIRECTED AGAINST THE FACILITATION PROCESS INVOLVED IN CERTAIN PREMISES IN THE CITY OF VANCOUVER

Facilitation Premises and Type of Action	Annual Number of Infections From Premises		Percentage Reduction in Infections
	Before Action	After Action	
Disorderly Houses Public Education Law Enforcement	55.5	22.2	60.0
Beer Parlours Cancellation of Licence Partition to Segregate Sexes Co-operation of Brewery Industry	70.3	21.0	71.2
Dance Hall Prohibit Unescorted Women Co-operation of Owner	22.5	6.0	73.3
Rooming House Change of Ownership Co-operation of Real Estate Agency	7.4	0.0	100.0

The action in connection with facilitation in beer parlours in Vancouver consisted of the cancellation of the licence of one parlour by the British Columbia Liquor Board and by compulsory partitioning of all premises, so that each premise was divided into two sections. One section admitted men only, and the other, women or women escorted by men. The need for this segregation was concurred in by the brewery interests who are anxious to dissociate their business from the facilitation of venereal disease.

Investigation of facilitation in dance halls revealed that it was associated overwhelmingly with one hall. In most instances the healthy males had met the sources of their infection in this dance hall. The sources were as a rule unescorted women. The management was very co-operative, and agreed voluntarily to refuse admission to unescorted women. Immediately this action was taken, the incidence of venereal disease associated with facilitation in the premises fell abruptly. It was interesting to note that coincident with this reduction, there was no reciprocal increase in facilitation in other dance halls in the city.

The example of the rooming house referred to in table 2 is typical of a number of premises in the same facilitation category. The owners of such premises generally were unaware of the venereal-disease facilitation of their properties. The rental agencies were undoubtedly in some instances well aware of the use of the premises for purposes of prostitution but had not been conscious of the concomitant venereal-disease dispensing that went on as an integral part of the prostitution. Knowledge of the latter gave them real concern. In the instance recorded in table 2, the real-estate company immediately sold the property for the original owners. Since then not a single instance of venereal disease has been associated with the premises.

In general it may be stated that, whenever facilitation was evident in the Greater Vancouver Area, the Division discreetly and diplomatically made the facilitators aware of their participation. With the exception of the operators of disorderly houses, the facilitators have been co-operative. In most instances, once their consciousness of aiding and abetting in the spread of venereal disease was aroused they were only too anxious to dissociate themselves from the unsavoury implications of their unwitting participation. The Division indicated the need for disruption of the association, the participants saw clearly this need and took the necessary action themselves.

Physicians who had made a habit of examining infected inmates of disorderly houses ceased this practice. The British Columbia Medical Association informed members of the profession that the close relationship of physicians in a medical capacity with the illegal pursuits of disorderly houses placed the physician in the role of being a party to the spread of venereal disease. Lawyers who were conscious of the disease-spreading proclivities of certain of their clients assisted in reducing facilitation by advising these clients of the serious threat of their activities to the public health and recommended an appropriate change in future conduct. In many instances, lawyers, to their great credit, put their clients' personal interests second to the interests of the public health. The City of Vancouver Licence Department drew the attention of massage parlours to sections of the City By-Laws which did not permit female operators to minister to male patrons. In these ways and many others was action directed against facilitation in its diversified forms in the Greater Vancouver Area.

The total effect of this approach has been to put the brakes on facilitation in the Greater Vancouver Area; to raise obstacles and impediments in the way of healthy persons seeking exposure to sources of infection. Community sources of venereal disease have become less accessible. The facilitator has found his income reduced; there is less "soiled" money in the community. What leaves his pockets falls into legitimate channels of trade.

For a period of four years strategy has been directed against facilitation in the Greater Vancouver Area. During the first two years the attack reached the more flagrant facilitation related to illegally-operating, disease-dispensing disorderly houses. In the past two years attention has been focussed increasingly on the less obvious facilitation. It is early to be dogmatic about the ultimate effect of this effort on the venereal disease incidence in the Greater Vancouver Area.

There are, however, early evidences of a very gratifying trend. In this Area for the years 1938 to 1941 inclusive, in spite of a state of war existing during the latter two years and in spite of greatly improved reporting by private physicians, the male gonorrhoea annual attack rate per 100,000 population has dropped from 341 to 247, a reduction of 28 per cent. During the same period of time, annual admissions for male primary and secondary syphilis at the Vancouver Clinic fell 46 per cent from 100 in 1938 to 54 in 1941.

Of particular interest and significance at the present moment is the influence of the program of suppression of facilitation upon the incidence of new venereal infections in the Armed Forces stationed in British Columbia. This incidence should reflect the incidence in the civilian population. The only figures available appeared in the Vancouver Daily Province newspaper for October 26, 1942, as a Canadian Press release from Ottawa. The dispatch is quoted in part as follows:

> In British Columbia, where public health authorities have been waging an active campaign against venereal disease, the incidence in the armed forces is generally lower than the average for Canada.
>
> The Navy's monthly incidence per 1,000 on the West coast is 3.79 cases against 7.6 cases on the East coast or an average of 5.29 for the two commands.
>
> In the Army statistics, Military District No. 11, with headquarters at Vancouver, has the best record of any military district, with an average monthly rate per 1,000 of 1.94 cases, against the average for all Canada of four cases per 1,000.
>
> Air Force reports show that Western Air Command—British Columbia—has a monthly average per 1,000 of 1.1 new cases against an average for all commands of 2.1 cases.

These satisfactory figures may be attributed in part to the strategy directed against facilitation, which has not been limited to the Greater Vancouver Area alone but has reached all parts of British Columbia. They indicate the role that action against facilitation may play in protecting the health and efficiency of the Armed Forces stationed in any community.

The present objective of the Division of Venereal Disease Control is to eliminate the factor of facilitation as much as possible from exposure to venereal infection in British Columbia. Table 1 indicates that in the Greater Vancouver Area, where the most intensive efforts have been carried out, 38 per cent or 276 of 708 male exposures to gonorrhoea were associated with facilitation. Aggressive action should reduce this percentage yearly to the point where, approaching our objective, promiscuity is reduced to a man-woman relationship free from the mercenary participation in this relationship of a third party. It may be predicted that the rate of reduction of the attack rate for gonorrhoea and syphilis in a given period of time will be proportional to the rate of reduction of facilitation in the same period of time. As the goal is approached, the incidence of new venereal infections should drop rapidly and the ability to locate specifically named sources freed from the association of facilitation be greatly enhanced. The forward movement of forces pressing for final eradication of venereal disease, utilizing all the modern scientific weapons available, including as an essential part of the armamentarium action based on the investigation of the acquisition of new venereal-disease infections in the community and directed at the facilitator and

the facilitation process, will gather momentum and force, sweeping before it as it moves the obstacles to a more wholesome and healthful community and home life.

CONCLUSIONS

1. The venereal diseases are largely the by-product of community conditions which facilitate the intimate exposure of healthy persons to infected ones.

2. The witting or unwitting, direct or indirect participation, often for monetary gain, of third persons known as facilitators in rendering persons with communicable venereal infection readily accessible to healthy persons is known as the facilitation process.

3. The nature and extent of the facilitation process in any community can be determined readily by a detailed investigation of individuals suffering from recently acquired infections amassing information not only concerning their sources but relating particularly to the circumstances whereby access was gained to these sources.

4. On the basis of cumulative evidence resulting from investigation of the role of facilitation in the acquisition of recent venereal infection, the duty of the health department is to arouse the consciousness of the facilitators of their participation in the spread of venereal disease and to indicate to these facilitators the need for them to initiate and direct action to eliminate that phase of the facilitation process with which they are associated.

5. The action directed against the facilitation process depends upon the nature and extent of the facilitation and upon the attitude of the facilitator. Where sincerity and voluntary co-operation are lacking, the coercive and deterrent effect of enforcement of specific laws and by-laws may be necessary.

6. Energy expended in the suppression of facilitation in a community is far more profitable from the public health standpoint than the usual misdirected efforts at suppression of prostitution which harrass the exploited unfortunate, sick prostitute and leave untouched the exploiting, wealthy, healthy facilitator.

7. In the Greater Vancouver Area, the Vancouver Clinic, Division of Venereal Disease Control, Provincial Board of Health, British Columbia, during the years 1938 to 1941 inclusive, determined the nature and extent of the facilitation process in the area and revealed this process in its true light as a principal contributing factor in the spread of venereal disease in the area.

8. The direction of appropriate action against the facilitation process in the Greater Vancouver Area has resulted in an early gratifying evidence of reduced venereal disease incidence in the civilian and resident military population in the area.

Tetanus Toxoid and its Use for Active Immunization*

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THIS study records the antitoxin response to tetanus toxoid in young adults. The first part of the study deals with the results obtained following two doses of toxoid as compared with three doses of an identical antigen. The second part has to do with the response to three doses of a combined antigen, made up of typhoid, paratyphoid A and B vaccine, suspended in tetanus toxoid.

PREPARATION OF TOXOID

In the preparation of the toxoid used in these studies, the following details are relevant. Upon the outbreak of war large quantities of tetanus toxin were prepared in anticipation of the requirements of toxoid for the armed forces. The broth used for this purpose was a veal infusion base with 1.5 per cent Witte's peptone added. With this medium the potency of the toxin obtained varied between 20,000 and 150,000 m.l.d. (guinea pig) per ml. Detoxification was carried out in the usual manner with formalin and storage at 37°C. The comparison of the antitoxin response to two doses and to three doses of antigen was based upon the results obtained with toxoid thus prepared. For convenience of expression and reference, toxoid made in that manner is designated Toxoid A. Experience with this toxoid, used under field conditions, showed that reactions of an anaphylactic character were occasionally encountered (1). In consequence of this, the use of Witte's peptone in the medium for the preparation of toxin was discontinued in the spring of 1940, and hog stomach autolysate plus veal infusion was substituted, Toxoid B. Later, the medium used for the production of toxin was one adopted for the purpose by E. M. Taylor (2), the basis of which was half veal infusion and half hog stomach autolysate treated with calcium chloride in order to reduce the iron content to a fixed level. A small amount of nicotinic acid was added, and the pH set at about 7.0. The strain of *Clostridium tetani* used throughout for the production of toxin was obtained in 1929 from the New York State Health Department, and used in these Laboratories continuously since that time. Incubation was carried out at between 35°C. and 36°C. for 10 or 11 days. The yield of toxin with this medium has been satisfactory. Dur-

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ing a period of 18 months, for example, of 130 lots of toxin made, 72 were between 100,000 to 220,000 m.l.d. per ml. Twenty lots of the 130 had a value of less than 30,000 and were discarded. Toxoid made in this manner with Taylor broth, Toxoid C, was combined with typhoid, para A and para B vaccine. The broth used for tetanus Toxoid B and tetanus Toxoid C is basically very similar to that used by Ramon for his combined antigen employed for many years in the French armed forces, and without the occurrence of reactions of an anaphylactic character. Similarly no such reactions have been reported following the extensive use of Toxoid B for a period of approximately 1 year, and of Toxoid C for 2 years. The antigenicity of the toxoid was tested either by the method of flocculation, antitoxin response in guinea pigs, or combining power, or a combination of these methods.

PART I

Comparison of the Antitoxin Response to Two and Three Doses of Tetanus Toxoid

This experiment was carried out in two groups of volunteers to determine the comparative antitoxin response to an identical antigen, Toxoid A, used in two doses and three doses of 1 ml. given during the same total elapsed time. The intervals shown in Table 1 were approximately 6 weeks between the first and second doses in the two-dose group, and in the three-dose group 1 month between the first and second and 2 weeks between the second and third doses. A blood sample was obtained 70 days after the final dose in each group. The antitoxin titrations of the serum were carried out at various levels, in mice.

TABLE 1

UNITS OF TETANUS ANTITOXIN PER ML. OF BLOOD SERUM 70 DAYS AFTER 2 OR 3 DOSES OF TETANUS TOXOID A

Number of Doses of Tetanus Toxoid A	Number of Subjects	Units of Antitoxin 70 Days after Last Injections					Per cent	
		<0.001	0.001–<0.01	0.01–<0.1	0.1–<1.0	1.0	≥0.1	≥0.01
2*	61	2	9	36	14	0	23	82
3†	54	0	4	13	36	1	68	92

*39 days between doses.
†28 and 11 days respectively between doses.

For convenience, the results of the titration of the 61 blood samples of the two-dose group, and the 54 in the three-dose group may be considered as falling into two categories. Thus, in the two-dose group, 82 per cent of persons have at least 0.01 unit of antitoxin, in contrast to 92 per cent in the three-dose group. Taking 0.1 unit as a basis of comparison, the results in the two groups are more strikingly contrasted; 23 and 68 per cent respectively. On the basis of this study, which was carried out late in 1939, it was felt justified to recommend without hesitation that three doses of toxoid be used in place of two, and given within the elapsed time of 6 weeks. As a matter of fact, since three doses

of typhoid para A and para B vaccine were recommended for the armed forces, it seemed convenient and logical for administrative purposes to combine tetanus toxoid with the typhoid antigen (T.A.B.T.)* as had been advocated by Ramon, and had been the current practice in the French armed forces since 1936 (3). This combined antigen was introduced for use in the Canadian armed forces in the spring of 1941.

Antitoxin Response to a Recall Dose

It was urgent to gain experience of the effectiveness of the recall dose ("dose de rapell," of Ramon) for tetanus toxoid. The co-operation of 20 persons was obtained (8 in the two-dose group and 12 in the three-dose group) to take 0.1 ml. of Toxoid A, 70 days after the last dose had been given. The small secondary stimulus was chosen primarily to determine whether by a small subcutaneous dose one could detect the persons who had become highly sensitive to Witte's peptone toxoid, Toxoid A, through previous inoculations. If no reaction were obtained with this small dose within, say ½ hour, the full dose could then, if desired, be administered with a greater feeling of safety. In the group of 20 volunteers no evidence of sensitivity was encountered. This is not surprising, considering the small size of the group and the known infrequency of reactions, following Toxoid A preparations. It is obvious that the small dose used in our study weighted the odds against the antigen. If, under these exacting conditions, the response in antitoxin were good, one would perhaps be justified in inferring that a larger dose would not evoke a lesser response and, indeed, probably a better one. That such is the case is borne out later in this study. Because of the urgency of the situation, it was also thought justifiable to shorten to 70 days the time between the primary series of inoculations and the recall dose and to measure the response in antitoxin within 9 days. These factors also tend to weight the odds against the effectiveness of the antigen. Thus by imposing the very exacting and unfavourable conditions under which the antigen was used, the results, if good, could be accepted with some degree of confidence, and serve as a firm basis for formulating recommendations as to the dosage of tetanus toxoid. It will be seen from Table 2 that all but 2 in the three-dose group, and 1 in the two-dose group, showed an increase in antitoxin within 9 days. Thus, in spite of the limitations imposed upon the antigen by the conditions of the experiment, 85 per cent of 20 persons showed an increase in antitoxin following the small secondary stimulus of 0.1 ml. There is much evidence that the antigen now supplied has much higher antigenic potency, hence the results of this experiment are particularly encouraging. The tetanus toxoid now used is made from toxin pooled to contain 100,000 m.l.d. per ml. as contrasted with the early lots of toxin of 40,000 m.l.d. per ml.

The effectiveness of a small stimulus, 70 days after the primary inoculation, was also explored in a group of 38 persons, 25 in the two-dose group and 13 in the three-dose group, 1 month after the secondary stimulus of 0.1 ml. Toxoid A.

*750 million *Bacillus typhosus*, 250 million *B. paratyphosus* A, and 250 million *B. paratyphosus* B, per ml. of tetanus toxoid, containing about 10 Lf per ml.

TABLE 2

UNITS OF TETANUS ANTITOXIN PER ML. OF BLOOD SERUM IMMEDIATELY BEFORE AND 9 DAYS AFTER RECALL DOSE OF 0.1 ML. TETANUS TOXOID A

Units Immediately Before Recall Dose	Number of Doses	Number of Subjects	Units Antitoxin 9 Days After Recall Dose			
			0.05–<0.1	0.1–<0.4	0.4–<0.8	=0.8
=0.01	Two*	1	1	..	..	..
0.01–<0.1	"	5	..	5	..	..
0.1 –<0.4	"	2	..	1	1	..
0.01–<0.1	Three†	1	..	1	..	..
=0.1	"	1	..	1	..	..
0.1 –<0.4	"	9	..	2	7	..
0.4 –<0.8	"	1	..	..	..	1
Total.....		20	1	10	8	1

*39 days between doses.
†28 and 11 days respectively between doses.
Recall dose 70 days after last dose.
85 per cent of the 20 subjects showed an increase in antitoxin 9 days after recall dose.

The response after 30 days was essentially the same as after 9 days (Table 2); that is to say, 85 per cent showed an increase within 9 days and 84 per cent an increase within 30 days.

PART II

Response to Three Doses of T.A.B.T.

Before the combined antigen, which is officially designated as T.A.B.T., was recommended for use in the armed forces it was urgently required to carry out a trial of the antigen under field conditions. This trial was begun in July, 1940, on a small group, from 79 of whom we were able to obtain blood samples 8 weeks after the third dose. Three doses of 1 ml. of the combined antigen, T.A.B.T., were given with intervals of 3 weeks between doses. It will be seen from Table 3 that 99 per cent of 79 persons had at least 0.02 unit of antitoxin, and 87 per cent had at least 0.1. This is a very satisfactory result and gives one a high degree of confidence in the effectiveness of tetanus toxoid as an antigen. samples were not obtained strictly within the 2 weeks' time. All of these 36 sera

TABLE 3

UNITS OF TETANUS ANTITOXIN PER ML. OF BLOOD SERUM, 56 DAYS AFTER THIRD DOSE OF T.A.B.T.

Units Antitoxin per ml. of Serum	Number of Subjects	Per cent of Subjects	
<0.001	1	1.3	12.7%
0.02–<0.1	9	11.4	
0.1–<0.5	54	68.3	87.3%
≥0.5	15	19.0	
Total.....	79	100.0	

Based chiefly on theoretical evidence, supported by laboratory experiment, 0.01 unit has been suggested by certain workers (4) as the level required to establish clinical immunity. On this basis, the fact that 99 per cent of 79 persons had 0.02 unit per ml. of serum leaves little to be desired. However, it should be emphasized, though it is perhaps not surprising, that one individual did not respond with any detectable amount of antitoxin (<0.001 unit).

Although the figures are not large and the conditions for a critical test are wanting, since the identical antigen was not used in the comparative tests, the result of the trial with T.A.B.T. suggests that the combined antigen may be more effective than without the added typhoid element (see MacLean and Holt, 5). It happened that the initial m.l.d. (40,000) of the toxin was the same in each of the particular lots of Toxoid A and Toxoid C used for the results shown in Tables 1 and 3. In comparing the two groups, it will be noted that 68 per cent of 54 persons (three-dose group) had at least 0.1 unit of antitoxin as contrasted with 87 per cent of 79 persons, following three doses of T.A.B.T. The difference between the results in the two groups, one without, the other with added bacterial vaccine, is of statistical significance. It is, of course, not to be inferred that the initial m.l.d. of the toxin is the sole determining or necessarily the most important factor in the antigenicity of the toxoid made therefrom.

Response to a Recall Dose of T.A.B.T.

An opportunity arose to obtain information on the rapidity and degree of antitoxin response to a secondary stimulus using T.A.B.T. 0.5 ml. at approximately 1 year after the primary course of inoculations. The antigen used in the initial course was Toxoid A or Toxoid B (Table 4a), given in two doses, generally at 6 weeks' interval, or three doses of T.A.B.T. given at intervals of 3 weeks (Table 4b). This latter antigen was introduced in the Canadian armed forces in the spring of 1941.

It must be emphasized that the groups under investigation are not entirely satisfactory from the point of view of the accuracy of history of primary inoculations. For example, of 105 persons (Table 4a), in 16 instances no data were obtained as to previous history, except that the subjects had been required to have their recall dose. Under the circumstances of the mobility of troops it was impossible to obtain more accurate data. In Table 4a are shown the results of a group given initially Toxoid A or B, two doses of 1 ml. with an interval of 6 weeks. Of 105 subjects, 92 per cent showed at least 0.1 unit per ml. within 10 to 14 days after the first recall dose of 0.5 ml. of T.A.B.T. Actually 74 per cent of the whole group had more than 1 unit, 15 per cent more than 10 units, and 1 individual, 70 units. As is well established in the response to diphtheria toxoid, the individual variation is very great. It is striking that a small group responded either not at all or very poorly. Fortunately this is a small group, only 3 showing no response within the limits of the test (<0.001 unit). It may be significant that the 3 persons who showed no measurable response (<0.001 unit) to the recall dose had similarly no measurable antitoxin at the time the stimulus was given. One of these individuals is recorded as having had only one dose,

TABLES 4A AND 4B

UNITS OF TETANUS ANTITOXIN PER ML. OF BLOOD SERUM AFTER FIRST RECALL DOSE OF 0.5 ML. T.A.B.T.

Table 4A Primary Inoculation Toxoid A or B Units of Antitoxin Just Before Recall Dose	Number of Subjects	Units of Antitoxin per ml. Serum after First Recall Dose										
		<0.001	0.001–<0.01	0.01–<0.1	0.1–<1.0	1.0–<5.0	5.0–<10	10–<20	20–<30	30–<40	50–<60	70
<0.001	21	3	1	3	11	3	..	..	..	..	..	..
0.001–<0.01	21	..	..	1	2	16	2	..	..	..	..	..
0.01 –<0.10	39	..	..	..	6	25	1	4	2	..	..	1
0.10– <1.0	20	..	..	..	..	13	1	5	..	1	..	..
1.0 –<5.0	4	..	..	..	..	1	..	2	..	..	1	..
Total.....	105	3	1	4	19	58	4	11	2	1	1	1
Table 4B Primary Inoculation—T.A.B.T. Titrations not done before 1st Recall Dose	63	1	2	1	1	13	9	33	1	1	1	..

1st recall dose given 12-18 months after last dose of primary series of inoculations.
Table 4A—Primary inoculation = 2 doses of toxoid A or B—blood drawn immediately before and 10–14 days after 1st recall dose.
Table 4B—Primary inoculation = 3 doses of T.A.B.T.—blood drawn from 10 days to 9 months after 1st recall dose.

approximately 2 years prior to the recall dose. Of the remaining 2, 1 had an interval of 2 months between his first and second dose, the other had 11 months between his first and second dose. However, one does not wish to emphasize these anomalies of inoculation as being the underlying cause for the poor response. The histories are not completely reliable and there are other similar anomalies in the group with good response. For example, there are, among the 105 subjects, 10 who are recorded as having had only one dose, but who as a group showed a satisfactory response following the recall dose. Every effort has been made to verify the histories of those who did not respond, and we have no evidence that they did not receive the doses as recorded.

It may be noted that, in general, the higher the level of antitoxin at the time of the secondary stimulus, the greater the antitoxin response. For example, all those with 0.01 unit of antitoxin or more at the time of the recall dose, had at least 0.1 unit after the recall dose; indeed, the great majority had at least 1 unit. As a matter of fact, of those having <0.01 unit before the recall dose, none showed as much as 10 units after the recall dose, whereas, of those having at least 0.01 or more initially, 15 per cent had 10 or more units.

Table 4b shows the results obtained in a group similar to that shown in Table 4a, except that the initial series of injections was T.A.B.T., and no titrations were made upon the sera previous to the recall dose. The blood samples were not obtained strictly within 2 weeks, as is the case of the subjects of Table 4a—most of them being drawn within 2 months, and 2 at 9 months. It appears that, on the whole, the response to the recall dose following the initial injections of T.A.B.T. is better than that following two doses of Toxoid A or B. Thus

92 per cent of 63 persons had at least 1 unit of antitoxin per ml., in contrast to 74 per cent of 105 subjects of Table 4a. This difference is statistically significant. It should be emphasized that one person failed to respond with any detectable amount of antitoxin. Thus, in a total of 168 persons (Tables 4a and 4b) 4 did not respond to the recall dose (2 per cent) and 3 others responded poorly (<0.01 unit). Boyd and Maclennan (6) have mentioned the possibility of lack of response being overcome by a recall dose of toxoid in referring to the development of tetanus in 5 inoculated men. Our results show that of 21 persons (Table 4a) who had no detectable antitoxin 1 year after the primary injections, 18 responded to a recall dose. It seems clear that the majority of persons, even though they have no detectable antitoxin, do respond to a recall dose, but some do not.

Response to a Second Recall Dose of T.A.B.T.

We were fortunate in being able to obtain blood samples from 31 persons who had had two recall doses of 0.5 ml. of T.A.B.T. at an interval of approximately 1 year. Blood was drawn at the time of the second recall dose and about 10 days later. The results are presented in Table 5a. It is of interest to contrast these results with those shown in Table 4a. In the latter table, 42 (40 per cent) of 105 persons had less than 0.01 unit per ml. of serum before receiving a recall dose, whereas all in Table 5a had at least 0.01 unit before receiving the second recall dose. As might be anticipated, the level of antitoxin is, in general, much higher 1 year after the first recall dose than 1 year after the primary series of inoculations. In so far as the response to the second recall dose is concerned, only 1 of the persons in Table 5a had a level of antitoxin below 0.5 unit, whereas 8 per cent of 105 persons (Table 4a) had less than 0.1 unit. Table 5b shows the results of titrations obtained from a group similar to that in Table 5a, except that no blood samples were obtained previous to the recall dose, and that the

TABLES 5A AND 5B

UNITS OF TETANUS ANTITOXIN PER ML. OF BLOOD SERUM AFTER FIRST OR SECOND RECALL DOSE OF 0.5 ML. T.A.B.T.

Table 5A Units of Antitoxin 1 Year after 1st Recall Dose	Number of Subjects	Units of Antitoxin per cc. of Serum after 2nd Recall Dose			
		0.1–<1.0	1.0–<5	5–<10	≥10
0.01–<0.05	8	3	5	..	..
0.05–<0.1	2	1	1	..	..
0.10–<1.0	16	3	11	1	1
1.0–<5.0	5	..	1	2	2
Total.....	31	7	18	3	3
Table 5B Titrations not done before 2nd Recall Dose	36	3	13	12	8

Second recall dose given approximately 1 year after 1st recall dose.
Table 5A—Blood drawn immediately before and from 10 to 14 days after 2nd recall dose.
Table 5B—Blood drawn from 10 days to 17 months after 2nd recall dose.

samples were not obtained strictly within the 2 weeks' time. All of these 36 sera showed at least 0.1 unit per ml. Thus, each of the 67 sera comprising Tables 5a and 5b had at least 0.1 unit per ml. after the second annual recall dose.

Although the numbers are not large, it may be of significance that, before the first recall dose was given, 20 per cent of persons shown in Table 4a had less than 0.001 unit per ml., and 20 per cent of persons, in addition, less than 0.01 unit per ml., after a primary series of inoculations 1 year previously. This is in striking contrast to the results presented in Table 5a, in which it is shown that all had at least 0.01 unit 1 year after the first recall dose, that is to say, 2 years after the primary inoculations. There seems thus no doubt that the level of antitoxin is higher a year after the recall dose than a year after the primary series of injections.

In view of these results and based upon the good and prompt response to a small dose of toxoid given 70 days after the primary injections (Table 2), we suggest that the interval between the primary three inoculations of T.A.B.T. and the first recall dose be not less than 3 and not more than 6 months, and the second recall dose be given 1 year later. This does not, of course, preclude the giving of toxoid at the time of the infliction of a wound whenever this should occur. Modification of this schedule may be made in order that the recall dose may coincide as nearly as is practicable with the entry of troops into the combat zone.

In general, it may be assumed that the longer the interval between the primary series of injections and the recall dose the better. However, the shortening of the interval between the primary series and the first recall dose (4th dose) would seem from our study to offer certain distinct advantages. The antitoxin content would reach higher levels sooner, and be longer maintained, and the disturbingly low levels found 1 year after the primary series (Table 4a) would not obtain. Further, the second recall dose, which in our studies has been shown to be very effective, could be given 15 to 18 months after the primary series in place of 24 months as is the current practice.

SUMMARY

By the use of a medium of veal infusion and hog stomach autolysate, tetanus toxin of high titre has been obtained. Following the use of toxoid made therefrom no reactions of an anaphylactic character have been reported.

By comparing the effectiveness of an identical tetanus toxoid, given to two groups in the same period, namely 6 weeks, our results show that the response in antitoxin in persons given three doses of tetanus toxoid is better than in persons given two doses.

Represented numerically, 68 per cent of 54 persons in the three-dose group had at least 0.1 unit of antitoxin per ml. of serum 70 days after the last dose of tetanus toxoid, as compared with 23 per cent of 61 in the two-dose group.

Under conditions which weighted the odds against the antigen, a small (0.1 ml.) secondary stimulus given 10 weeks after the primary series of inocula-

tions caused 85 per cent of 20 persons to show an increase in antitoxin titre within 9 days.

A combined antigen of tetanus toxoid with typhoid vaccine (T.A.B.T.) given in three 1-ml. doses, 3 weeks apart, stimulated the production of at least 0.02 unit of antitoxin in 99 per cent of 79 persons, and at least 0.1 unit in 87 per cent.

Although the conditions for a critical comparison are lacking, since the identical antigen was not used in the two groups compared, the results suggest that tetanus toxoid with the typhoid element added (T.A.B.T.) is more effective than without.

Under field conditions the effectiveness of a recall dose of 0.5 ml. of T.A.B.T. was explored. Of 168 persons, 92 per cent had at least 0.1 unit of antitoxin per ml. of serum following the first recall dose.

In general, the antitoxin response to a recall dose is less in persons with low levels of antitoxin than in persons with relatively higher levels.

In general, the levels of antitoxin are distinctly higher in persons 1 year after a recall dose than 1 year after the primary inoculations.

From 10 days to 17 months after a second recall dose, given 1 year after the first recall dose, all of 67 persons had at least 0.1 unit per ml. of serum.

The recommendation is put forward that the first recall dose of T.A.B.T. (4th dose) be given not less than 3 and not more than 6 months after the primary series of injections. Modification of this schedule may be advisable in order that a recall dose may coincide with the entry of troops into the combat zone.

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Tularaemia in the "Seven Persons Coulee," Alberta

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THE first indication that ticks in Alberta were carrying tularaemia infection occurred in 1938 when Rocky Mountain spotted fever ticks, *Dermacentor andersoni* Stiles, collected by the Alberta Rocky Mountain Spotted Fever Survey, were found to be infected with *Pasteurella tularensis*, the organism causing tularaemia. Since that time tularaemia-infected ticks have been found in many localities in southern Alberta.

The first human case of tick-transmitted tularaemia to be reported in Alberta occurred in a 35-year-old sheep herder at Walsh in 1939. This was followed in 1940 by a second human case, and since that time many cases of tick-transmitted tularaemia have been reported from southern Alberta.

HISTORICAL

Tularaemia, or rabbit fever, is a disease of rodents which can be contracted by man through the handling of infected animals, by the bite of the deer fly *Chrysops discalis*, and by the bite of the spotted fever tick *Dermacentor andersoni*.

The causative organism was isolated and described by McCoy and Chapin (5) in 1912. The first human case in Canada was reported by MacNabb (6) in 1930. In 1932 Shaw and Jamieson (12) reported the disease as occurring in Northern Alberta. The first case of tick-transmitted tularaemia in Alberta was recorded by Brown (1) in 1939.

In 1924 Parker, Spencer and Francis (7) reported the spotted fever tick *D. andersoni* as carrying tularaemia in Montana. In 1939 Gibbons (3) reported spotted fever ticks in southern Alberta as carrying this infection.

Francis (2) working in Washington, D.C., in 1919 reported tularaemia infection in rabbits. In 1926 Parker and Spencer (8) recorded the natural infection of many species of wild animals in Montana.

In 1927 Parker and Butler (9) reported tularaemia infection in sheep in Montana. Parker and Dade (10) in 1929 reported ticks as transmitting tularaemia to sheep. In 1935 Philip, Jellison and Wilkins (11) reported on a serious outbreak of tularaemia in sheep in Montana. Gwatkin et al (4) in 1942 reported tularaemia infection in sheep in the Seven Persons Coulee.

Detailed investigations carried out in the United States have shown that such wild animals as rabbits, ground squirrels and mice, and such birds as sage

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hens and grouse, carry the infection in nature and that they constitute a reservoir for the disease.

Domestic animals, such as dogs and cats, may contract the infection through eating diseased animals and there is a possibility that they can transmit the infection so contracted to human beings.

DESCRIPTION OF THE AREA

The Seven Persons Coulee is a valley varying from one-half to two miles in width, and approximately forty miles in length. It runs in a north-easterly direction and consists of a vast network of small coulees and draws. Generally speaking, the Seven Persons Coulee acts as a drainage system for the west slope of the Cypress Hills and empties into the South Saskatchewan River at Medicine Hat.

The land in the Coulee is typical range land, and the vegetation is a mixture of sage brush, buck brush and short range grass. Some of the land is cultivated but the greater part is used as range by two or three large cattle and sheep ranches.

Small draws on the sides of the Coulee and cattle paths through the sage brush of the bottom-lands are ideal places for ticks, and large numbers of drag ticks have been collected there. Host ticks are also extremely abundant.

INVESTIGATIONS

1940

The first indication of tularaemia in the Seven Persons Coulee area occurred in June, 1940, when the 35-year-old wife of the owner of the "X" ranch was admitted to the Medicine Hat General Hospital. She was suffering from a fever of unknown origin and gave a definite history of tick bites. Specimens of her blood were submitted to the Provincial Laboratory at Edmonton and agglutination tests proved positive for tularaemia. She was discharged from hospital as recovered in July, 1940.

An immediate investigation into the occurrence of ticks in this area was undertaken and it was found that ticks were present in large numbers throughout the whole coulee. Information gathered from the ranchers showed that, during the spring and early summer, horses, cattle and sheep were heavily infested with host ticks, and that during the early spring a number of sheep had died from an unknown disease.

The tick collections made during the investigation did not show tularaemia infection.

1941

The investigation was resumed in the spring of 1941 and in May a total of 3,387 drag and host ticks were collected on the "X" ranch. Of this number 2,294 were drag ticks collected from sage brush and buck brush by the usual dragging methods. The host ticks, numbering 1,093, were collected from 2 horses, 6 cows and 4 calves.

One collection of drag ticks taken from vegetation near the ranch house was positive for tularaemia. This area was undoubtedly the source of the infection in 1940 of the above-named.

1942

This district was again visited in 1942, and on April 29th a jackrabbit which had recently died was found about one mile south of the "X" ranch buildings. This animal on examination yielded 8 host ticks, two still attached and six on the ground nearby. Examination of the animal disclosed typical tularaemia lesions of the liver and spleen. On subsequent bacteriological examination the ticks were reported positive for tularaemia and *P. tularensis* was recovered from the liver and spleen of the jackrabbit.

A collection of 200 drag ticks made in the same area on the same day was also positive for tularaemia.

On April 29th Mr. "Y", a 50-year-old sheep herder on the neighbouring ranch "Z", was admitted to the Medicine Hat General Hospital. He had a large lump in the left axilla, complained of pain in the back, and had an inflamed area around a healed cut on the left thumb. Tularaemia was suspected. Blood specimens and tissue excised from the lump in the left axilla were submitted to the Provincial Laboratory and both proved positive for tularaemia. "Y" was discharged from hospital as recovered on May 22nd.

When interviewed on May 4th, he volunteered the information that about 25 sheep had died on the "Z" ranch from some unknown disease on or about April 25th. He also stated that he had cut his thumb while skinning the carcasses. These were the sheep reported by Gwatkin et al (4) as having died of tularaemia.

On May 7th a further investigation in the Seven Persons Coulee was carried out. During this investigation a Richardson ground squirrel (*Citellus richardsoni*, Sabine), which had recently died, was found in a small coulee about 3 miles north and one mile west of the "X" ranch house. This animal was host for one nymph and one adult tick (*Dermacentor andersoni*). Bacteriological examination showed both ticks to be carrying tularaemia infection, and it can be inferred that the ground squirrel was also infected.

SUMMARY OF INVESTIGATIONS

Since 1940 an area of less than 40 square miles in the Seven Persons Coulee has produced 9 separate positive tests for *Pasteurella tularensis* infection as follows:

1.	Mrs. "X", 35-year-old housewife	June, 1940
2.	285 drag ticks taken near the "X" ranch house	May, 1941
3.	Mr. "Y", 50-year-old sheep herder	April, 1942
4.	25 sheep on the "Z" ranch	April, 1942
5.	One jackrabbit found dead	April, 1942
6.	200 drag ticks taken in the same area where the jackrabbit was found	April, 1942
7.	8 host ticks taken from jackrabbit	April, 1942
8.	One ground squirrel found dead	May, 1942
9.	One nymph and one adult host tick taken from dead ground squirrel	May, 1942

ACKNOWLEDGMENTS

Most of the credit for locating the infected area is due to the efforts of Messrs. G. D. Roy, J. L. Macleod, J. W. Taylor and J. C. Carney, all members of the Alberta Rocky Mountain Spotted Fever Survey. Dr. W. R. Fraser, now of Vancouver, B.C., also rendered splendid assistance while a member of the Survey in 1940 and 1941.

Our appreciation is extended to Dr. D. N. MacCharles and Dr. John Corley of Medicine Hat for their assistance in tracing the extent of this infection. To Mr. D. O. Williams, a member of the 1942 Survey, our thanks are extended for his assistance during the preparation of this paper.

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Examination of Sera from Persons in Manitoba, Ontario and Quebec for Neutralizing Antibodies (Western Type) of Encephalomyelitis*

CHAS. A. MITCHELL AND J. WM. PULLIN
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FOLLOWING the 1939 and 1941 outbreaks of encephalomyelitis in Western Canada, much speculation arose as to the possibility of sub-clinical infections. It is well known that the inoculation of the virus in experimental animals gives rise to neutralizing antibodies in the survivors; also there is no evidence to show that non-specific neutralizing substances are found in persons who have never been infected with encephalomyelitis. Therefore, a survey by means of the neutralization test of persons in the affected area should throw light upon whether sub-clinical cases had occurred.

Dr. F. W. Jackson, Deputy Minister of Health and Public Welfare for Manitoba, undertook an epidemiological study of the disease in his province and during its course collected specimens of serum from persons in various parts of the province. These sera were studied by us. There is therefore no point in discussing the origin of these samples except to say that they were taken from persons who, so far as was known, had not gone through an attack of encephalomyelitis.

The virus (western type) used was that contained in infected guinea-pig brain. The advantage of using this tissue is that virus is contained in relatively small amounts and consequently may be titred with more precision. The virus is passaged through at least six guinea pigs in serial order, using the intracranial route. The animal chosen as the source of virus is killed at the height of the febrile stage. The brain is removed aseptically, finely ground and suspended in 10 per cent buffered glycerine where it is allowed to remain for 10 days. Then it is centrifuged in an angle centrifuge and the supernatant removed from any large particles which may be present. This supernatant is passed through a cotton filter and the resultant fluid must contain no visible particles. For approximately two weeks after harvesting there is a rapid fall of titre: then it becomes stabilized and remains fixed for months. For this reason the clear fluid is allowed to stand in the refrigerator for approximately 10 days before determining titre.

The minimum lethal dose is estimated by diluting the material in question up to 1:50,000, using a fresh pipette for each dilution and inoculating 0.2 cc. intracranially into two guinea pigs of about 500 gms. weight. Great regularity of infection usually follows. After titration the amount chosen for the test is

*Presented at the eleventh annual Christmas meeting of the Laboratory Section, Canadian Public Health Association, held in Toronto on December 17 and 18, 1942.

10 m.l.d. The serum to be tested should be at least a week old since occasional fresh human serum contains substances which are toxic for guinea pigs if inoculated intracranially. These substances disappear on standing. 0.5 cc. of unheated serum is combined with an equal quantity of guinea-pig brain suspension so that 0.2 cc. of the mixture contains 10 m.l.d. The mixture is gently agitated and allowed to incubate for 20 minutes, after which one guinea pig is inoculated intracranially with 0.2 cc. Samples of serum are "screened" in this manner and those showing the presence of neutralizing antibodies are re-tested, at which time 10 m.l.d. and 40 m.l.d. are employed using 2 guinea pigs each. By this means all sera containing an appreciable amount of neutralizing antibodies are discovered.

One thousand and thirteen samples collected in Manitoba were tested in the manner described. Of these, 192 or 18.95 per cent were found to possess neutralizing antibodies. The information received with the samples would appear to indicate that the samples formed a satisfactory cross-section of the population, all of whom had shown no clinical evidence of encephalomyelitis. If the neutralization test is specific, the results would seem to indicate that almost 20 per cent of the population of the areas where samplings were made had been infected with encephalomyelitis in a sub-clinical form.

If the test is not specific, it would seem reasonable to believe that similar samplings taken in Ontario and Quebec should show the presence of an equal number of persons capable of neutralizing the virus of encephalomyelitis. It is true that encephalomyelitis has occurred in Ontario in horses, but in a rather limited area in New Ontario. Other than this, the disease has not been known to occur in this province.

Through the kindness of Dr. A. L. MacNabb, Director of Laboratories, Department of Health, Province of Ontario, Toronto, and Mr. W. H. McCrady, Chief of Laboratories, Provincial Ministry of Health, Montreal, samples of serum were sent to us. These sera had been submitted for a variety of examinations such as the Wassermann and Widal tests. Some were positive. In all, 101 samples were forwarded from the Provincial Laboratories in Toronto, among which were two sera capable of neutralizing Western encephalomyelitis virus. One serum was that of a soldier, a former resident of New Ontario. The other was that of a native of Poland, whose movements after arriving in Canada we were unable to trace. Of the 50 samples from the Province of Quebec, all proved incapable of neutralizing Western encephalomyelitis virus. Twenty-five of these samples were "positive Wassermann's" and the remainder negative. It is therefore apparent that if these samples are representative of the Provinces of Ontario and Quebec, the number of persons capable of neutralizing Western encephalomyelitis virus must be exceedingly small and probably due in each instance to contact with the virus.

CONCLUSION

It appears safe to conclude that the large number of persons in the Province of Manitoba capable of neutralizing encephalomyelitis virus results from subclinical infections which occurred at the time of the 1939 and 1941 outbreaks.

The Provincial Deputy Ministers of Health and Health Insurance

A Submission to the*
SPECIAL COMMITTEE ON SOCIAL SECURITY
of the
HOUSE OF COMMONS
March 30, 1943

MANY public health problems are both national and provincial in scope and, therefore, require the resources and co-operation of the federal, provincial and local health agencies.

The principle of grants-in-aid for public health services, as indicated on page 10, schedule 1, section 3, of the draft health insurance bill, is strongly advocated. These grants are proposed to (1) aid the provinces with further development of their essential preventive measures, and (2) supplement provincial and local moneys required in the development of adequate local health services.

The benefits which are proposed in the draft bill before the committee appear to be quite comprehensive and the right of choice which is conferred upon the beneficiary respecting physicians and hospitals, we believe, is essential for the success of health insurance. In our opinion, however, the provision in so far as preventive services are concerned would appear to be too indefinite.

We beg to recommend in respect to administration:

1. That any proposed provincial act, as related to health insurance, be so drawn that the provincial government, after consultation with professional and other groups concerned, may administer such act through the provincial department of health or by a commission responsible to the legislature through the Ministry of Health.

2. In the event that the Act is administered through the provincial department of health, we beg to recommend that:

(*a*) For the purpose of administration in carrying out the provisions of the Act and the regulations made thereunder, there shall be established within such department a division of health insurance.

(*b*) There shall be appointed by the Minister of Health a director of the division of health insurance chosen from a panel nominated by the provincial division of the Canadian Medical Association—this particular provision may have to be altered to take care of the situation in Quebec where we understand there are three or four medical associations which have more or less equal standing in the province—who shall be a doctor of medicine, preferably with training in public health, regularly qualified, duly licensed and in good standing

**Presented by Dr. B. T. McGhie, Deputy Minister of Health and Hospitals, Province of Ontario, on behalf of the Provincial Deputy Ministers of Health.*

in the province and who has practised his profession for at least ten years. His duties shall be to administer and carry out the provisions of the Act and, subject to the approval of the Advisory Council hereinafter mentioned, to make recommendations to the minister in respect to the operation thereof.

(*c*) There shall be created a provincial advisory council on health insurance consisting of the deputy minister or chief health officer, who will be chairman, two representatives of the provincial division of the Canadian Medical Association,—and the same qualification mentioned before in respect to Quebec applies here—and other persons comprising one representative each of the dental, nursing and pharmacal professions and of the faculties of medicine in the province and of hospitals, labour, industry and agriculture and of women's urban and rural organizations respectively; these to be appointed by the lieutenant-governor in council and shall hold office for a period of one, two or three years, respectively, as designated by the lieutenant-governor in council.

(*d*) The provincial advisory council on health insurance shall meet regularly four times per year and may be called for special meetings at any time by the chairman or on the written request of any five members of the council.

3. In the event that any province should decide that health insurance be administered by a commission, we recommend that:—

(*a*) The commission shall consist of three members, one of whom shall be chairman. The chairman shall be a doctor of medicine, preferably with training in public health, regularly qualified, duly licensed and in good standing in the province and having practised his profession for at least ten years. The chairman and other members of the commission shall be appointed by the lieutenant-governor in council. The deputy minister of health or chief health officer of the province shall be a member of the commission ex-officio.

(*b*) There shall be created a provincial advisory council on health insurance consisting of two representatives of the practising physicians in the province and such other persons comprising one representative each of the dental, nursing and pharmacal professions and of the faculties of medicine in the province and of hospitals, labour, industry and agriculture and of women's urban and rural organizations, respectively; these to be appointed by the lieutenant-governor in council and shall hold office for a period of one, two or three years, respectively, as designated by the lieutenant-governor in council. The chairman of the commission and the deputy minister or chief health officer of the province shall be members ex-officio.

(*c*) The council shall meet regularly four times per year and may be called for a special meeting at any time by the commission or on the written request of any five or more members of the council.

It is essential that any scheme of health insurance should provide for both preventive and curative services, and the general practitioner should extend to all those under his care the benefits of both. aided by such consultant and directional assistance as may be required. It is further appreciated that certain

of the preventive services may be more effectively and economically carried out under provincial, district or municipal auspices.

In other words, certain of the services we feel may not come within the purview of the general practitioners and may have to be carried out by the provincial, district or municipal health agencies.

It is, therefore, urged that the provisions of any health insurance measure should require that the general practitioner assume responsibility for the following services and that provision be made for payment out of the health insurance fund to the general practitioner for rendering such services:

1. Pre-natal and post-natal supervision in keeping with the standards set by the Canadian Medical Association.

2. Medical supervision of infants and children under five years of age in keeping with the standards set up by the Canadian Medical Association; such supervision to include immunization against those communicable diseases which now are, or hereafter may be, designated by the association.

In conclusion we would emphasize that this statement, a copy of which we will present to the secretary when it has been duly signed by all of us, be considered as an interim communication from this group. We trust that the group, through its committee, may be privileged to present further information pertinent to the whole subject of health insurance as and where this standing committee may request it.

CONFERENCE OF THE VITAL STATISTICS SECTION CANADIAN PUBLIC HEALTH ASSOCIATION OTTAWA, OCTOBER 6, 1943.

A conference of the Vital Statistics Section of the Association will be held in Ottawa on Wednesday afternoon, October 6th, under the chairmanship of Dr. F. S. Burke. The conference is being held in Ottawa rather than as part of the Association's annual meeting in Toronto, because of the fact that the Dominion-Provincial conference of registrars of vital statistics is being convened in Ottawa on October 7th, 8th and 9th. Those interested in the work of the Section are cordially invited to attend this session, which will be held in Salon B of the Chateau Laurier, at 2.30 p.m.

Minimum Requirements for Employment in Public Health Nursing

THE following recommendations regarding minimum qualifications for nurses employed in the field of public health nursing have been approved by the Public Health Nursing Section of the Canadian Public Health Association and the Public Health Section of the Canadian Nurses Association. They will be considered valid until 1946.

Academic Qualifications

A staff nurse, supervisor, assistant director, and director should have pass matriculation. A higher educational attainment is desirable.

Personal Qualifications

A staff nurse should possess good physical health; emotional stability; sound character; pleasing personality; good judgment; an enquiring mind; an interest in and an understanding of people; the ability to get along with people; a well-developed sense of responsibility; resourcefulness and an ability to organize her work; tenacity of purpose, with an ability to adjust to the demands of a situation; and initiative.

Supervisors should possess all the qualifications mentioned as desirable for a staff nurse and, in addition, the capacity for leadership. Directors and assistant directors should possess marked executive ability in addition to the qualifications noted as being desirable for supervisors.

Professional Qualifications

Staff Nurse

An applicant for the position of staff nurse should hold (a) a diploma in nursing from a recognized hospital or university school of nursing; (b) a certificate or diploma in public health nursing from a recognized university school or department. These may be obtained from one and the same university. The applicant should be registered in the province or state where her training was received and should be eligible for registration in the province where employment is sought. She should be a member of the Canadian Nurses Association.

Preparation for the field of public health nursing should be secured through (a) from two to three years of study in a hospital school of nursing followed by one year of special preparation in public health nursing; or (b) a well-integrated training of between three and four years, with emphasis upon preventive teaching throughout, and including specific teaching in organized public health work.

Emphasis should be given throughout the course to the preventive and constructive aims of nursing and, by means of the student health service, a personal application of the principles of preventive medicine should be made. During ward practice, emphasis should be placed upon prevention in the following

services: medicine, including syphilis and gonorrhoea; surgery; obstetrics; outpatient department and hospital social work; paediatrics; communicable diseases; and psychiatry. In all these services, mental as well as physical needs should be recognized in nursing care.

Health aspects should be stressed in the teaching of basic subjects such as medicine, surgery, and obstetrics. A study should be made of preventive medicine (lectures and laboratory), public health nursing, teaching procedure, social work, nutrition, oral hygiene, mental hygiene, and psychology.

Contact with community health services should be maintained throughout the undergraduate course. A minimum of three months of practice work including experience in a municipal health department and a visiting nurse organization, should be afforded the student. Preferably she should also be given experience in a rural community. Preparation for the practice of public health nursing should aim to develop in the student the qualities of initiative and independent thought.

Supervisor, Assistant Director, and Director

The basic professional qualifications for a supervisor are the same as those outlined above for the staff nurse. In addition, she should possess a minimum of from two to four years of diversified experience; at least one of these experiences should have been obtained in a public health nursing agency where adequate supervision is provided. The supervisor should have a technical knowledge of the specific field to be supervised. Special training (both theoretical and practical) in the field of supervision is desirable. The assistant director should possess the professional qualifications outlined for a supervisor. In addition she should have had satisfactory supervisory experience, preferably with more than one organization. Additional post-graduate experience is desirable. She should also possess executive and administrative qualities and a technical knowledge of the specific field. The director should possess the professional qualifications outlined for an assistant director and should have taken additional post-graduate work. Marked administrative capacity and business ability are necessary.

The Nurse Working Alone

The nurse who must work alone must possess the professional and academic qualifications outlined for the staff nurse. In addition she should possess maturity of judgment, the ability to organize the community and to maintain sustained interest, together with an aptitude to work with lay and professional groups along health lines. She should have given satisfactory service on a supervised staff for a period of at least one year.

RECOMMENDATIONS

1. That attention be called to the possibility of securing preparation for the public health nursing field through the newer method outlined above, although it is recognized that, at the present time, facilities for this type of preparation are limited.

2. That consideration be given to the establishment of public health nursing internships. Internship is a plan whereby an inexperienced nurse, immediately following her basic preparation for public health nursing, would have an opportunity to spend from four to six months with an adequately supervised public health nursing agency. Because of the training and the intensive supervision inherent in internship, the salaries of interns would be considerably less than the salaries of the regular staff.

3. That the Canadian Public Health Association should prepare a health report form to be used by employing agencies when considering the employment of new workers.

4. That the Provisional Council of University Schools and Departments of Nursing be asked to draw up a suitable form for use in requesting a confidential report on the professional training of the graduate nurse applying for admission to a graduate course in public health nursing in a university school or department.

5. That the study committee of the Public Health Nursing Section of the Canadian Public Health Association be asked to draw up: (a) a suggested application form for use by an employing agency suited to candidates with all types of public health nursing preparation; (b) a confidential report form to be used by an employing agency when asking for a report from an organization where the applicant has been formerly employed.

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FURTHER ADVANCES IN THE TREATMENT OF INFECTIONS

PUBLICATION has just been made of a report of five hundred cases of infections treated with penicillin. This report has been issued by the Committee on Chemotherapeutic and Other Agents, Division of Medical Sciences, National Research Council of the United States.* Public attention has been drawn to penicillin by newspaper reports of its striking value.

The initial observations of Professor Alexander Fleming in 1929 of the antibacterial action of cultures of penicillium were not developed clinically until Professor Howard Florey and his co-workers in Oxford University prepared an extract in purified form used in the treatment of a series of infections in 1940-41. In their communication they recorded the results of the treatment of 10 patients. The method of production of penicillin employed involved the use of very large quantities of culture and a difficult method of purification to permit of human administration. Arrangements were made by Professor Florey in the United States for the preparation of penicillin on a large scale and for intensive study of methods of purification and of possible synthesis. The present methods of production, although yielding much larger amounts of penicillin, are still in the developmental stages, with the result that penicillin is a very expensive product and only small quantities are available. Furthermore, penicillin is at present distributed as the sodium salt and it must be stored at a refrigerator temperature, under which conditions it remains with only slight loss for three months. Solutions of the sodium salt must be used within twenty-four hours. The instability of penicillin in its present form adds to the problem of supply and distribution. In the treatment of acute infections, quantities of from one hundred thousand to two and a half million units are required. Treatment is continued for a period of days after the acute conditions have been met. In the series of cases reported, the treatment period varied from four to fifty-two days.

The report is most encouraging. It states: "Penicillin has been found to be extremely useful in the treatment of infections due to the staphylococcus, the haemolytic streptococcus, the pneumococcus, and the gonococcus. . . . It has been of great benefit in those cases of infection that are resistant to the sul-

Chester F. Keefer and others: Penicillin in the Treatment of Infections. J.A.M.A., 1943, 122: 1218.

phonamides. . . . To obtain the best results it is necessary to inject penicillin continuously or at frequent intervals for at least seven to fourteen days or longer. This is necessary because penicillin is excreted rapidly in the urine . . . Penicillin is a remarkably potent anti-bacterial agent which can be given intravenously, intramuscularly, or topically. It is ineffective when given by mouth . . . It has been disappointing in the treatment of bacterial endocarditis. Its effect is particularly striking in sulphonamide-resistant gonococcic infections . . . Patients with pneumococcic pneumonia frequently recover following the use of 100,000 units given over a period of three days . . . Toxic effects are extremely rare."

In the series of infections, favourable results were obtained in cases of meningitis, osteomyelitis, infections of the skin and subcutaneous tissues, and empyema.

In Canada, small-scale production was arranged last spring in the University of Toronto under the auspices of the National Research Council, to permit of studies of methods of preparation and purification. Substantial progress has been made. Production in Canada to meet the needs of the armed services, and as quickly as possible to meet urgent civilian needs, is being furthered by the Dominion Government. However, it is unlikely that supplies of penicillin will be adequate for the needs of the civilian population on this continent until the close of the war.

Limitations in the value of penicillin will undoubtedly be found as clinical experience is developed. It is known that bacteria may become resistant to penicillin. Combination of the use of various chemotherapeutic measures with specific serums, or the combination of several chemotherapeutic products, may prove to be the most effective methods for the treatment of certain infections. As with the sulphonamides, progress in the study of anti-bacterial substances from moulds will no doubt be rapid. In addition to the use of the blue-green mould *Penicillium notatum,* strains of *Aspergillus clavatus* and *Aspergillus fumigatus,* isolated from soils, have been shown to possess definite bacteriostatic action. Success in the efforts to synthesize penicillin would undoubtedly result in making the drug available in its most effective form.

In the United States the Committee of the National Research Council under the chairmanship of Dr. Chester F. Keefer of Boston has been responsible for the distribution of such supplies of penicillin as have been available. As a result of this wise provision, it has been possible to have a report of 500 treated cases. In Canada a committee is being established in Ottawa to serve in a similar capacity, so that the needs of the armed services may primarily be met and such supplies as can possibly be spared may be made available for study and use by clinicians in meeting some of the most urgent civilian cases.

From the public health standpoint, the advances in the chemotherapy and the promise of further success through penicillin and possibly other extracts of moulds have removed pneumonia from its position as one of the major causes of death and reduced greatly the deaths from many other infections which were important factors in our death rate. The armamentarium of the physician today is greatly strengthened by the advances of the past decade in the field of chemotherapy, which now has been extended by promising findings in mycology.

A Message from the President of the Canadian Public Health Association

This year the Canadian Public Health Association will limit its annual meeting to a two-day wartime conference on public health. The sessions will be devoted to the study of current problems in public health and social security—in particular, those concerning health insurance, full-time health services, and the inclusion of curative and preventive medicine in the proposed health insurance plan.

The necessity for keeping our population physically and mentally fit in spite of the present arduous living conditions and the still harder post-war situation which we can easily foresee, creates an urgent need for the immediate solution of these problems. It is at a time like this, particularly, that the Canadian Public Health Association, representing the medical officers of health, public health nurses, and other members of health departments, should give leadership. The wartime conference provides an opportunity for the formal and informal discussion of the health needs of Canada and the ways in which they can best be met. The full co-operation of all who attend the sessions is asked, so that practicable plans may be formulated for the post-war provision of adequate health services for every citizen.

Ad. Groulx.

WARTIME CONFERENCE

AND

THIRTY-SECOND ANNUAL MEETING

CANADIAN PUBLIC HEALTH ASSOCIATION

ROYAL YORK HOTEL, TORONTO

OCTOBER 4 and 5, 1943

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PROGRAM

MONDAY, OCTOBER 4th

9.00 a.m. **Registration.** All members and guests are expected to register. A fee of $1.00 is charged to meet in part the expenses of the conference. Registration Desk: CONVENTION FOYER.

9.30 a.m. to 10.30 a.m. Open Meeting of the Executive Council. PRIVATE DINING ROOM No. 8, MAIN MEZZANINE FLOOR. All members of the Association are cordially invited to attend this session.

9.30 a.m. to 12.30 p.m. Meeting of the Public Health Nursing Section. PRIVATE DINING ROOM No. 10, MAIN MEZZANINE FLOOR.

FIRST GENERAL SESSION, 10.30 A.M.

CONCERT HALL

Chairman: DR. ADELARD GROULX, Director of the Department of Health of Montreal and President of the Canadian Public Health Association

Symposium: Plans for Full-Time Local Health Services for All Parts of Canada (in the Light of National Health Insurance):

1. Introduction. DR. B. T. MCGHIE, Deputy Minister of Health and Hospitals, Province of Ontario.
2. The Maritime Provinces. DR. P. S. CAMPBELL, Chief Health Officer, Department of Public Health, Province of Nova Scotia.
3. Quebec. DR. JEAN GREGOIRE, Deputy Minister, Ministry of Health and Social Welfare, Province of Quebec.
4. Ontario. DR. J. T. PHAIR, Chief Medical Officer of Health, Province of Ontario.
5. The Prairie Provinces. DR. M. R. BOW, Deputy Minister of Health, Province of Alberta.
6. British Columbia. DR. G. F. AMYOT, Provincial Health Officer, Province of British Columbia.
7. Résumé. DR. B. T. MCGHIE.

MONDAY, 2.15 P.M.—SECOND GENERAL SESSION

CONCERT HALL

Chairman: DR. ADELARD GROULX, Director of the Department of Health of Montreal and President, Canadian Public Health Association

1. Meningococcal Infection. MAJOR N. E. MCKINNON, Department of National Defence, Ottawa.
2. The Integration of Preventive and Curative Medicine in the Proposed Plan of National Health Insurance:

   DR. D. SCLATER LEWIS, Montreal, President of the Canadian Medical Association.

   DR. F. W. JACKSON, Deputy Minister of Health and Public Welfare, Province of Manitoba.
3. Health Insurance from the Public Health Standpoint—DR. J. J. MCCANN, M.P., Renfrew Ontario.

MONDAY, 6.30 P.M.—ANNUAL DINNER

ROOF GARDEN

Tickets ($2.00) will be on sale at the Registration Desk until 6.00 p.m. Those planning to attend the dinner are asked to obtain them as early in the day as possible.

Chairman: DR. ADELARD GROULX, Director of the Department of Health of Montreal, and President, Canadian Public Health Association

1. Presidential Address. DR. GROULX.
2. Address. DR. GEORGE B. DARLING, President of the W. K. Kellogg Foundation of Battle Creek, Michigan.
3. Presentation of the awards in the 1942 National Health Honour Roll Contest, conducted by the Canadian Public Health Association in co-operation with the American Public Health Association:

   The winning cities (listed alphabetically):

   Hamilton, Ontario (DR. J. EDGAR DAVEY, M.O.H.)

   St. Boniface, Manitoba (DR. PAUL L'HEUREUX)

   St. Catharines, Ontario (DR. D. V. CURREY)

   Windsor, Ontario (DR. JOHN HOWIE)

   The winning rural units:

   Arthabaska County, Quebec (DR. EMILE POISSON)

   Nicolet County, Quebec (DR. JEAN PAQUIN)

   Okanagan Valley, British Columbia (DR. J. M. HERSHEY)

   St. Hyacinthe-Rouville Counties, Quebec (DR. MARC BERGERON)

   St. Jean-Iberville-Laprairie-Napierville Counties, Quebec (DR. A. LAPIERRE)

   Shefford County, Quebec (DR. R. P. BRUNEAU)

The contest for cities is financed by the W. K. Kellogg Foundation and that for counties by the Metropolitan Life Insurance Association.

TUESDAY, 9.15 A.M.—THIRD GENERAL SESSION

CONCERT HALL

Chairman: DR. ADELARD GROULX, Director of Department of Health of Montreal and President of the Canadian Public Health Association

1. Recent Contributions to Knowledge in the Various Fields of Public Health:
   (*a*) Nutrition. DR. E. W. MCHENRY, Associate Professor of Nutrition, School of Hygiene, University of Toronto.
   (*b*) Industrial Hygiene. DR. W. H. CRUICKSHANK, Division of Industrial Hygiene, Department of Health of Ontario.
2. Some Observations on the Treatment of Poliomyelitis. DR. WILLIAM J. GARDINER, Associate in Therapy, University of Toronto.
3. Virus Pneumonia. DR. THOMAS FRANCIS JR., School of Public Health, University of Michigan.
4. Recent Contributions to Knowledge:
   (*c*) Communicable-Disease Control. DR. D. T. FRASER, Associate Director, School of Hygiene and Connaught Laboratories, University of Toronto.
   (*d*) Venereal-Disease Control. LIEUT.-COL. D. H. WILLIAMS, Army Venereal Disease Control Officer, Department of National Defence, Ottawa.

TUESDAY, 12.30 P.M.—LUNCHEON SESSION

PRIVATE DINING ROOM NO. 10
(Main Mezzanine Floor)

Chairman: DR. ADELARD GROULX, Director of the Department of Health of Montreal and President of the Canadian Public Health Association

Address. MR. V. R. SMITH, Confederation Life Association, Toronto.

Tickets ($1.25) will be on sale at the Registration Desk from 9.00 a.m. Monday.

TUESDAY, 2.15 P.M.—FOURTH GENERAL SESSION

CONCERT HALL

Chairman: DR. ADELARD GROULX, Director of the Department of Health of Montreal and President of the Canadian Public Health Association

1. Recent Contributions to Our Knowledge in the Various Fields of Public Health:
   (*e*) Maternal Hygiene. DR. ERNEST COUTURE, Director, Division of Maternal and Child Hygiene, Department of Pensions and National Health, Ottawa.
   (*f*) Child Hygiene. DR. R. R. STRUTHERS, Montreal.
2. The Hygiene of Housing. DR. C.-E. A. WINSLOW, Professor of Public Health, Yale University, New Haven, Conn.
3. Recent Contributions to Knowledge:
   (*g*) Tuberculosis Control. DR. R. G. FERGUSON, Medical Superintendent, Saskatchewan Anti-Tuberculosis League, Fort San, Sask.
   (*h*) Cancer Control. DR. R. O. DAVISON, Deputy Minister of Public Health, Province of Saskatchewan.
   Film: THAT THEY MAY LIVE, produced by the Saskatchewan Cancer Commission.